Association of Childhood Adversity, Psychological Distress, and Inflammatory Markers in Women Veterans

Karen L. Saban, PhD, RN, APRN, FAHA, FAAN[1,5]; Dina Tell, PhD[1]; Herbert Mathews, PhD[2]; Eileen Collins, PhD, RN, FAAN[3]; Solea Smith[1]; and Linda Witek Janusek, PhD, RN, FAAN[1]
[1]Loyola University Chicago, Marcella Niehoff School of Nursing, Maywood, IL, USA; [2]Loyola University Chicago, Stritch School of Medicine, Maywood, IL ISA; [3]University of Illinois Chicago, College of Nursing, Chicago, IL, USA; Edward Hines Jr. VA, Center for Innovation for Complex Chronic Healthcare, Hines, IL, USA

Background

Childhood adversity has been demonstrated to be associated with greater psychological distress (e.g., depressive symptoms, anxiety) but also contribute to inflammation that can lead to a greater risk for inflammatory-related diseases, such as cardiovascular disease (CVD). Despite this evidence, little is known about the relationship among childhood adversity, psychological distress, and markers of inflammation in women veterans.

Objective

The purpose of this study was to examine the association among childhood adversity, psychological distress, and inflammation in women veterans.

Methods

A cross sectional sample of women veterans (N=136) (mean age=50.65 SD=10.55) with risk factors for CVD participated in the study. Participants completed written measures to assess childhood adversity (Childhood Trauma questionnaire), depressive symptoms (Center for Epidemiologic Studies, and anxiety (State-Trait Anxiety Inventory). Morning blood samples were collected to measure levels of inflammatory markers, interleukin-6 (IL-6) and interferon-gamma (IFN-γ) production.

Picture credit: https://mn.gov/mdva/resources/familyassistance/womenveteransprogram.jsp
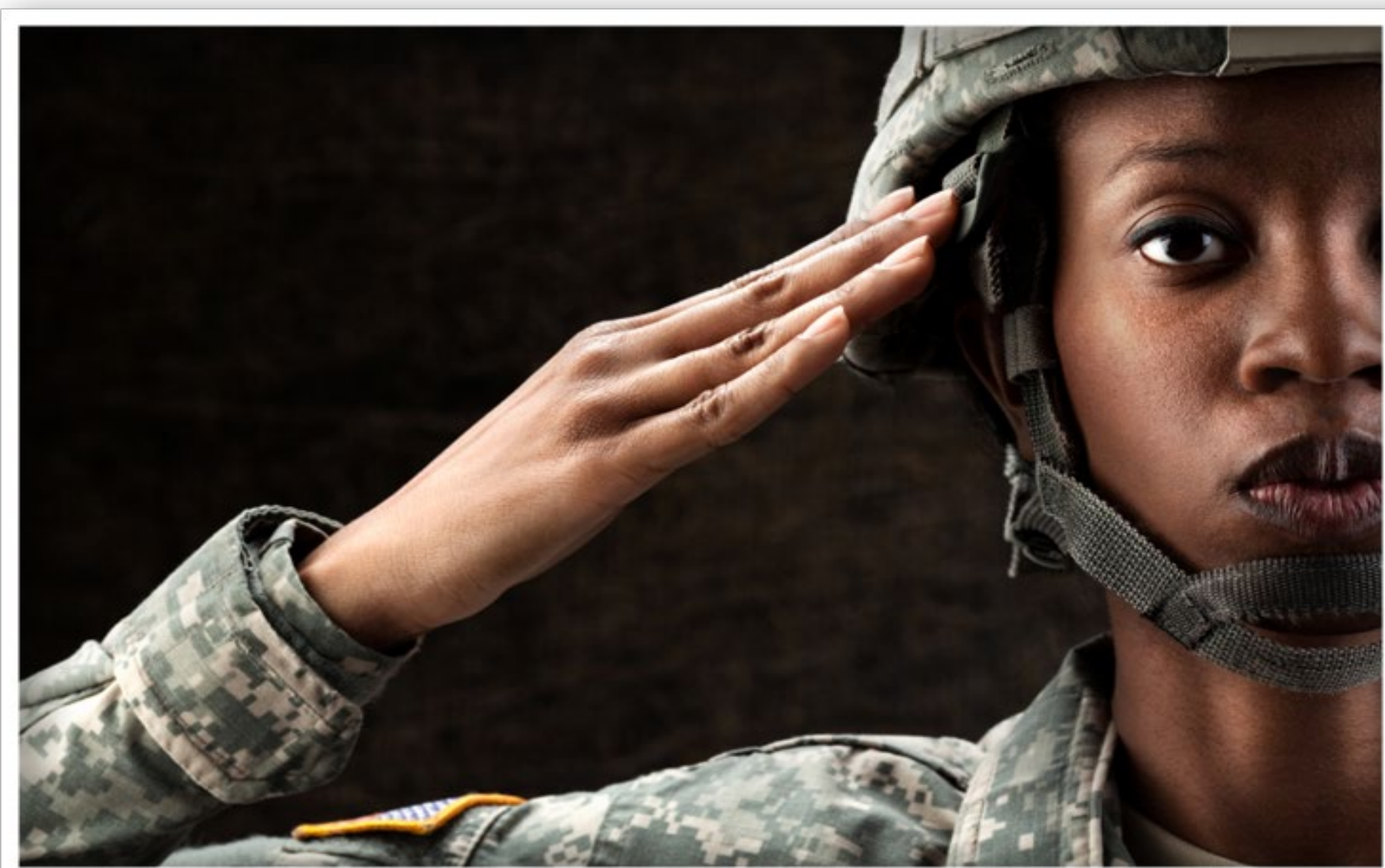
Results

Table 1: Sample Demographics

Variable	Women Veterans (N=136)
Age (yrs) Mean ± SD	50.65 ± 10.55
Education	Percent (%)
Highschool or GED	2.8
Some College	42.1
College graduate	36.2
Post-college degree	20.9
Race	
Caucasian	52.9
African American	40.7
Asian	1.3
Hawaiian or Pacific Islander	1.3
Other	4.4
Ethnicity	
Not Hispanic	87.3
Latinix	12.7
Marital Status	
Married	31.0
Divorced/Separated/Widowed	42.6
Single/Never Married	26.4
Income	
Less than $25,000	44.4
$25,001- 50,000	26.2
50,001- $75, 000	17.5
➢ $75,000	11.9

Women veterans reported higher Childhood Trauma Questionnaire (CTQ) subscale scores as compared to women with breast cancer; and higher CTQ subscale scores for emotional neglect, physical neglect, and sexual abuse but similar scores for emotional and physical abuse as compared to veteran men with substance use disorder.

Table 2: Mean Values for Childhood Trauma Questionnaire (CTQ)

| CTQ Subscales	Current sample Women Veterans (N=136) Mean age 50.65 ± 10.55	Women with Breast Cancer Sample* (N=40) Mean age 55.6 ± 9.4	Male Veteran Sample** (N=195) Mean age 46.86 ±12.25
Emotional Neglect	12.76 ± 5.34	9.2 ± 4.9	11.17 ± 5.01
Physical Neglect	8.71 ± 3.98	6.6 ± 2.6	7.76 ± 3.64
Emotional Abuse	11.92 ± 5.77	8.9 ± 4.9	11.28 ± 5.67
Physical Abuse	9.90 ± 4.89	6.9 ± 4.3	9.89 ± 4.69
Sexual Abuse	10.10 ± 6.65	6.8 ± 3.4	7.26 ± 4.78

*Janusek L., et al, (2013). Childhood adversity increases vulnerability for behavioral symptoms and immune dysregulation in women with breast cancer. *Brain Behav Immun*, 30 (suppl): S149-S162

** Young, B., et al., (2021). Traumatic childhood experiences and posttraumatic stress disorder among veterans in substance use disorder treatment. *Journal of Interpersonal Violence*, 36 (23-24), p. 12225-12685.

Results

Linear regression modeling revealed that greater exposure to childhood adversity was a significant predictor of more depressive symptoms (β = 0.295, p < .01), and greater anxiety (β = 0.304, p <.001). Moreover, exposure to childhood adversity was significantly associated with higher production of IL-6 (β = 0.22, p=.036) and IFN-γ (β = 0.185, p = 0.042). In addition, both depressive symptoms (β= -0.202, p = .044) and anxiety (β= -0.234, p = .009) were significant predictors of IFN-γ production. Although not significant, a trend was observed suggesting anxiety is associated with IL-6 production (β = -0.183, p=.053). All models controlled for age, race, comorbidities, body mass index, and social support.

Figure: IFN-γ and Total Childhood Trauma Questionnaire Score
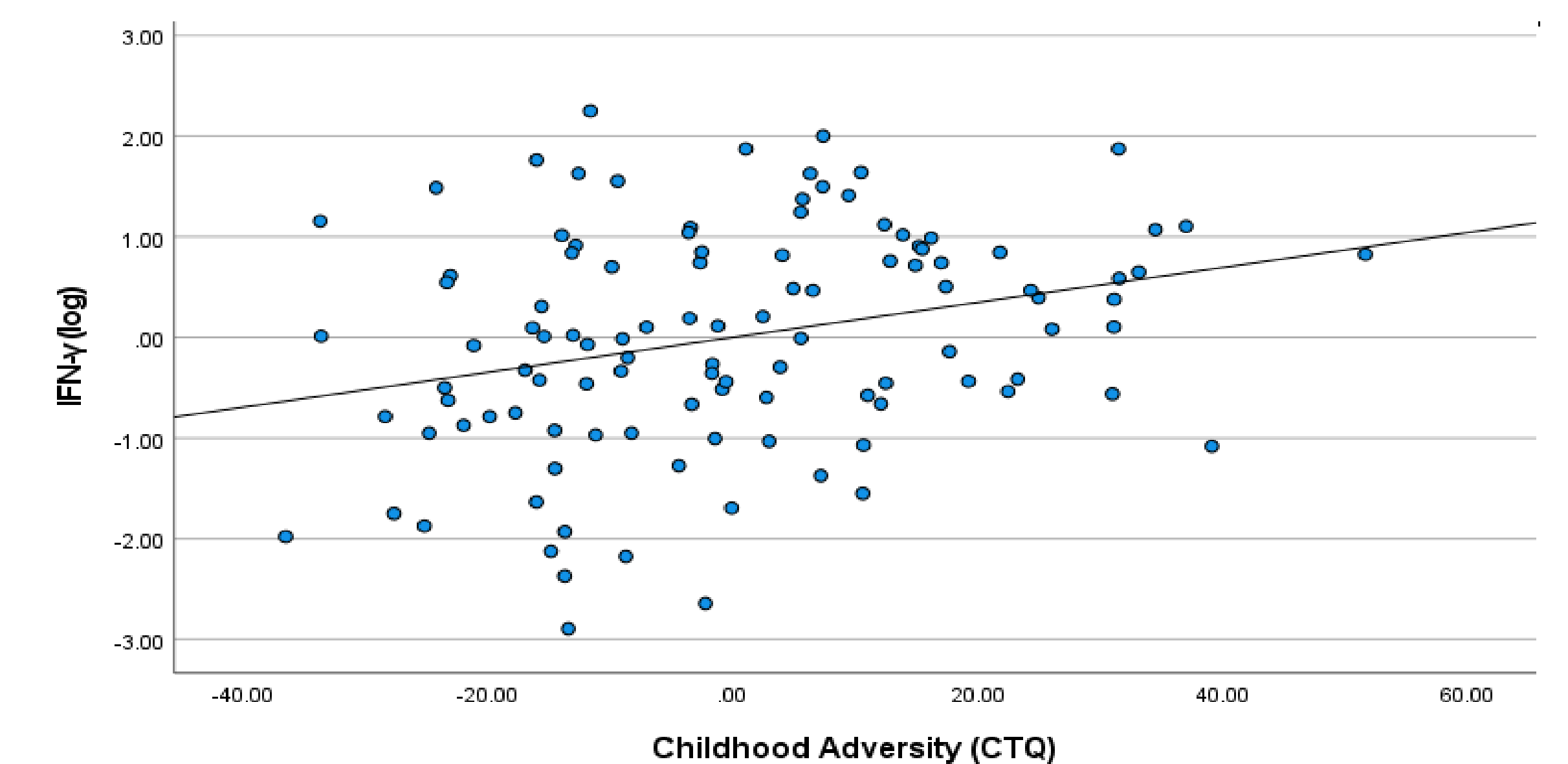
Conclusion and Implications

Results demonstrate that greater levels of early life adversity predict higher depressive symptoms and anxiety. Furthermore, higher levels of adversity are associated with greater production of markers of inflammation (IL-6 and INF-γ). Although more research needs to be done, our findings suggest that women veterans exposed to childhood adversity may be at greater risk for inflammatory-related disease.

Acknowledgements